

# THE TANK ROAD TO VICTORY OPENED

## How a New Weapon Has Helped Make It Possible to Turn Back the German Tide

By Theodore M. Knappen.

Washington, August 17.

TANKS are now the thing in military circles.

While ago it was airplanes that were going to win the war so far as it is to be won in actual conflict, but now it is tanks.

Men from every other arm of the military service are turning now to the tanks. Majors, captains and lieutenants are giving up their commissions in other services in order to enlist as privates in the "tanks."

Word has come back through the army channels of what one officer says and writes to another, that tanks will win this war as artillery won Napoleon's wars and as the British long-bows won in the Hundred Years' War.

The word runs that neither gas, airplanes nor massed artillery will be counted the epochal innovation of this war, but that the honor will be reserved for tanks. Even the haughty airmen are beginning to think that the tortoiselike machine that keeps close to Mother Earth is the coming conquering instrument of warfare.

See Hosts of Tanks Advance on Berlin

These may be but dreams of the enthusiasts who do and get things done, but they are very interesting and stimulating. Officers of the tank service are already imagining countless squadrons of the new armored cavalry, or "charging artillery," as the French are beginning to designate them, as sweeping steadily and relentlessly on toward Berlin, followed by hosts of well protected infantry, pausing now and then for the great guns to come up and blast the Germans out of some particularly well defended stronghold and then resuming the irresistible march.

They believe that if there were a hundred thousand tanks on the front now, the advance of the Allies to the heart of Germany would be almost a continuous procession.

Save Our Men And Destroy Enemy's

The tank meets two great requirements of successful warfare. It destroys the enemy and conserves its own side's man power. The smaller tanks, or "whippets," as the British call them, are practically armored cavalry, only the steel is mechanical and the driver sits inside instead of atop. The larger tanks are practically moving fortresses—land battleships. Between the two the eager visionists foresee a return in principle to the warfare of the Middle Ages and the days of feudalism and knight errantry, when the effective fighting men of armies were practically confined to the mounted knights in armor.

They believe that if Germany does not collapse in the near future the time will come when practically all the essential fighting in the nature of close contact with the enemy will be done by a number of tanks large absolutely but relatively small compared with the numbers of the armies that will come behind them to consolidate and organize what the tanks have won and make way for their further advance.

More Room for Tanks Than for Aeroplanes

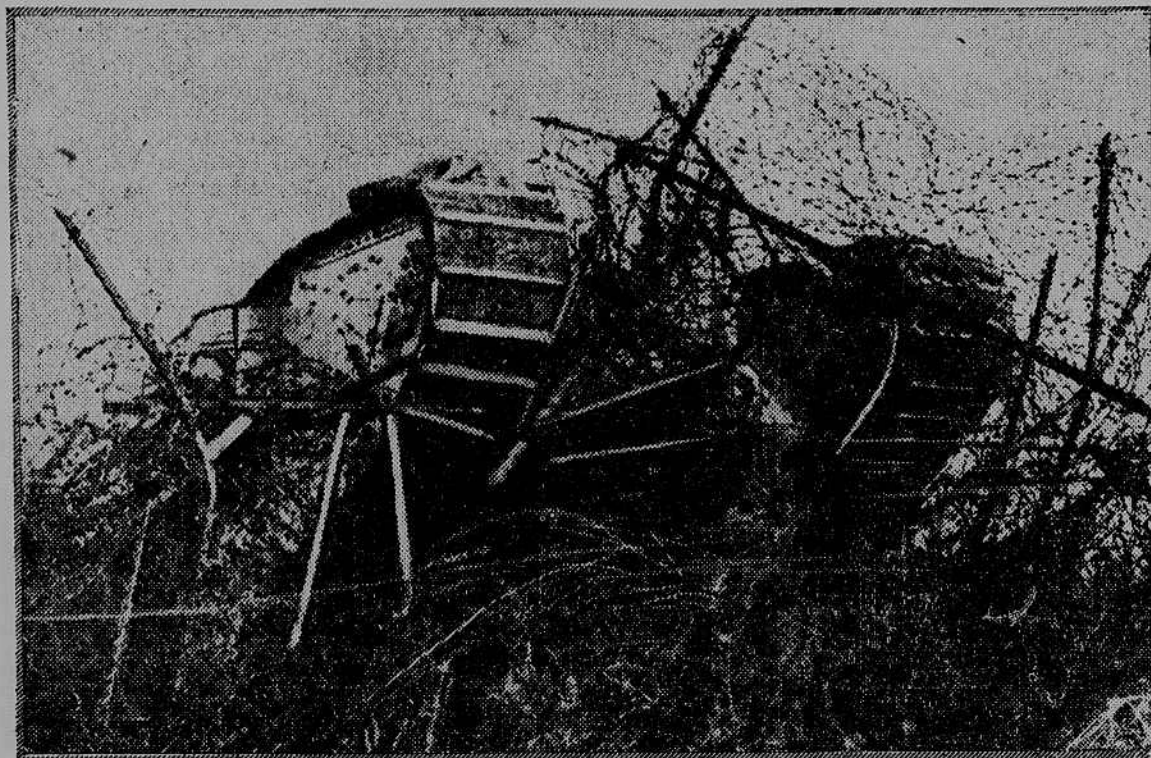
It is conceded that the limitations on the number of airplanes that can actually be used in fighting are much greater than on those of tanks. So far as the manufacturing capacity and transportation will permit, it is possible to mass tanks at the front as fast as men can be trained to operate them, and in time this number may come practically to represent all the infantry—so that it will be the only kind of actual fighting, and men will no longer expose their unprotected bodies to the chance of certain death or injury from a bullet or a piece of shrapnel coming their way.

The knights of old expected to be hit by sword and arrow, but they expected their armor to save them in most cases. The tank men expect their tanks to be hit, but, except for the chance of a heavy projectile hitting them, they do not expect a hit to mean death or wounds. The modern infantryman trusts for life to chance and casual protection of fixed barriers, such as trenches, earthworks and the like. If he is hit he is a casualty.

American Plans Carefully Hidden

Just what the United States is doing to take advantage of this new phase of modern warfare is shrouded in mystery. No other arm of the service is so secretive as that of the

THE MACHINES THAT BROKE THE GERMAN FRONT

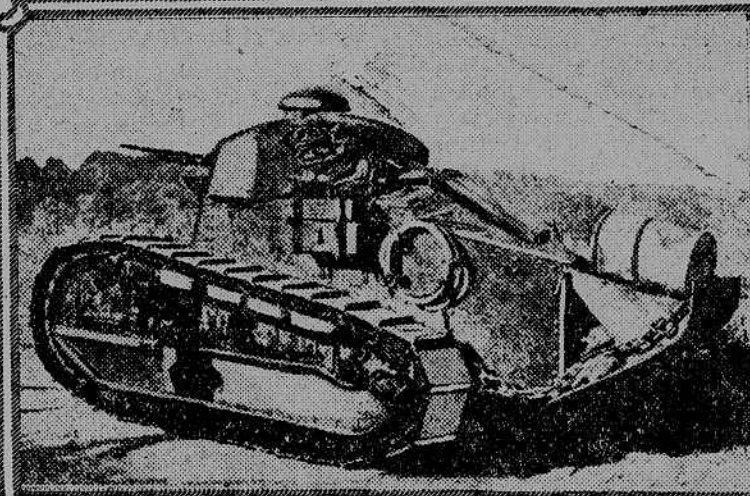
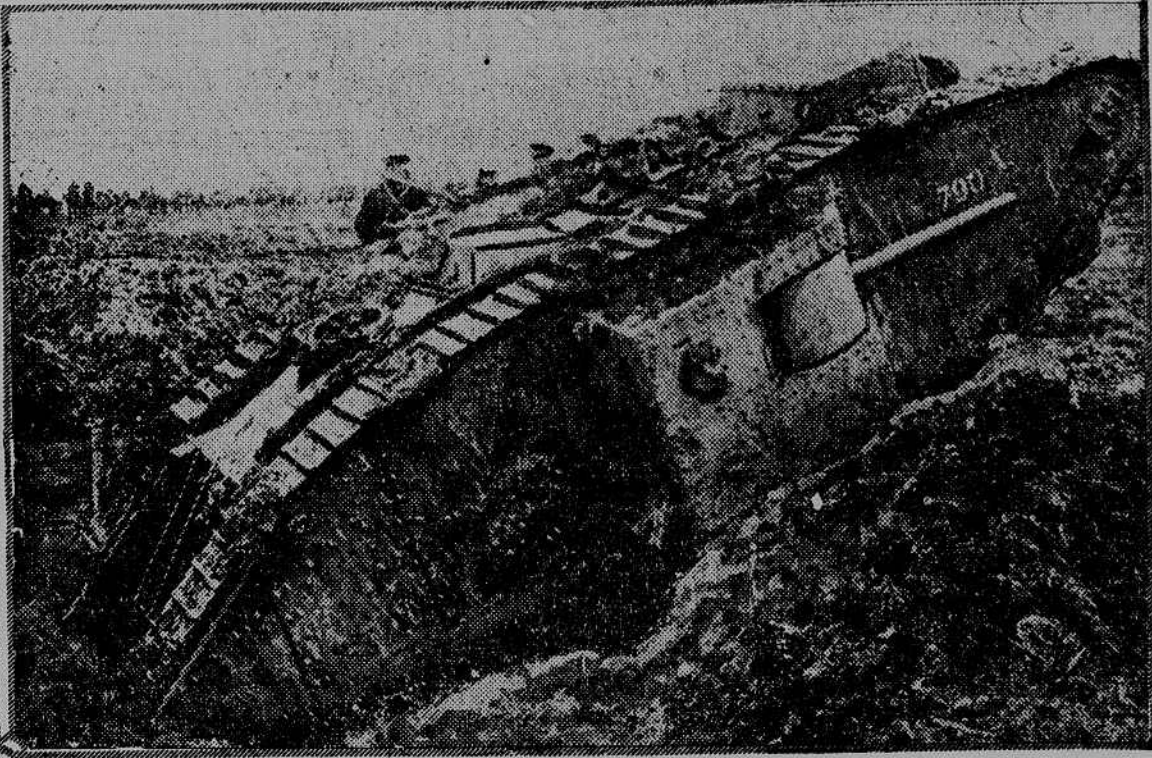


"Our tanks destroyed the enemy's wire entanglements," also said the reports. This shows one of them doing it.

(British Official Photo)



The British "Whippet," good for 12 to 15 miles an hour, and a terror to the Hun.



The French "mosquito," another fast recruit for the "steel cavalry."

(British Official Photo)

tanks. The reason for this is that the Allies are away ahead of the Germans in the development and use of tanks and that the new ideas that are constantly being introduced into them are a large part of their effectiveness.

The German lives in daily dread of a new tank surprise, and it is important to satisfy this dread. The Germans have testified that if the British had had a thousand tanks on hand when they first sprung them the war would have ended then and there in a chaotic German defeat. So now the Germans are kept in the dark both as to the numbers and varieties of the tanks that the Allies are bringing up against them.

Nothing of a definite nature is, therefore, officially permitted to get out, and it would be most unwise and unpatriotic to publish what is known, outside of what becomes public property through the revelations of the battlefields. Even the recent phenomenal success of the French and British tanks, which in respect to the performance of the former brought out special acknowledgment from General Petain and Premier Clemenceau of the pivotal character of their achievements, has not exhausted Allied power and inventiveness.

Talk of Vast Numbers Of Smaller Tanks

It is impossible to say anything about how large a scale the United States is building tanks and training the personnel to go with them. Some of the enthusiasts recommend the enlargement of the tank service to the dimensions of the Signal Corps, which, when it still included the army air service, numbered more than 125,000 men. They also insist on the immediate building of not less than 100,000 of the small tanks for two men and possibly one-man tanks.

No announcement has ever been made of what is actually being done in respect to the number of tanks being built or planned or the numbers of the men that are to use them. But there is no doubt that the High Command is fully aware of the immense potentialities of tanks and firmly committed to their use on a large scale. It is held that the utilization of tanks in immense numbers at an early date is much more feasible than that of a large number of airplanes, because their manufacture is not so novel a thing to American automobile and truck manufacturers.

Ordnance Department In Charge of Work

The production of the tanks is a function of the Ordnance Department, in which a special division is charged with the task. The service corps in the United States is directed by Colonel I. C. Welborn, who is a medal of honor man of the Regular Army, with service in the Spanish-American War, in the Philippines and in the Boxer expedition. He is reputed to be a man of great force and executive ability. His assistant is Captain Phil D. Poston. Brigadier General S. D. Rockenbach is commander of the tank service in France. It has been officially admitted that there is one battalion of the American tank service at the front, but whether these machines are American or foreign made is not known.

Thus far two tank camps have been established. The camp at Gettysburg, Penn., is a concentration and preliminary training camp and is in charge of Major D. D. Eisenhower. The advanced training camp is at Tobyhanna, Penn. Colonel W. H. Clopton is in command there. He has recently returned from France

with twenty-five assistant officers, who, after a thorough practical experience with tanks in England and France, will act as instructors for the men and officers of the rapidly growing Tank Corps. No information is available as to the numbers of men and the amount of equipment now at these camps.

Great Rush of Men To the Tank Service

The tank idea has taken the country by storm, and such is the eagerness of strong men, natural fighters and mechanics and engineers, to enter the service that it has become easy to make it a corps d'élite, ranking in the excellence of the personnel with the marines and the air service. Every man, whether for the fighting section or the mechanical side, is hand picked. Every officer is promoted from the ranks of the enlisted men. No man can secure a commission without first becoming a buck private.

Privates who have the natural equipment of officers are put through an officers' training school and on graduation are commissioned as second lieutenants. When commissioned they are assigned to duty ac-

cording to their special qualifications, which depend largely on what they did in civil life and their fighting or mechanical qualities. The fighters—the machine gun men, artillerymen and drivers—will be drawn, whether officers or privates, chiefly from the ranks of those who are not mechanically skilled. Mechanics and mechanical engineers will naturally drift to the maintenance work.

Give Up Big Salaries To Ride the Tanks

A well known business man about forty years of age has just given up a salary of \$100,000 a year to enlist as a private, with the hope of being an officer of the iron cavalry that is to charge on to Berlin. A film service manager on the Pacific coast has given up \$25,000 to do likewise. Hundreds of prosperous and successful leaders in civil life are swarming to the fighting colors of the tanks and are striving to emulate in their pugnacious aggressiveness the snarling wildcat that has been chosen as the emblem of the tank service. Take them all in all, physically, mentally and culturally, the tank men are declared to be the flower of the army.

## Tanks, Chief Weapon Against Barbed Wire and Machine Guns

By Austin C. Lescarboura

Associate Editor of "The Scientific American"

THE answer to German barbed wire and machine guns is the tank.

Until the tank was introduced by the British during the Battle of the Somme in 1916, it was well nigh impossible to advance against entrenched positions except after long artillery preparation so as to cut up the barbed wire and exterminate the German machine guns and their crews.

And the very fact that long artillery preparation was required, running into days and even weeks, gave the enemy ample warning that an attack was impending, with the result that he brought up his reserves and stopped the offensive in short order. To attack an entrenched enemy without first reducing his barbed wire and accounting for most of his machine guns was suicide, nothing more or less.

No military secret of this war has been more successfully kept than the tank.

The Germans, soon recovered from their fright, at once began to ridicule the tank. They pointed out how vulnerable the tank was to the smallest cannon and how easy it was to bring field guns into the front line trench to combat them. But all the while the Germans saw the possibilities of this new form of attack, and after capturing one or more of the British model they set to work devising their own.

The formula for a tank appears to be little more than a caterpillar tractor of the type often seen on American farms, carrying a steel box which houses a number of guns,

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The French did not introduce their tanks until the great offensive of April, 1917, along the Aisne. The story goes that the French, with characteristic conservatism, awaited the outcome of the British experiment before sending their own tanks into battle. But despite the hilly and unfavorable terrain of the Aisne battlefield the French tanks at once proved their worth.

In general principle the French tank follows its British counterpart. However, instead of bringing the caterpillar belts over the top of the body the French bring theirs low down so as to prevent a minimum mark to enemy projectiles. This design, it would seem, does not give as good climbing qualities as the British, although from a military point of view it is better because it is less vulnerable to damage.

German Tank Far Behind the Allies'

Then there is the German tank, or "Panzerkraftwagen," which made its debut during the offensives of this year. In general design the German tank presents nothing new. It appears rather to follow the lines of the French tank, with a low caterpillar belt covered over by the front and sides—an improvement over Allied tanks.

Due to the scarcity of steel-hardening materials the Germans have been forced to employ poor quality steel for their armor, and thickness and heavy plates have had to make up for poor bullet-resisting qualities. Thus the German tank is extremely heavy and cumbersome. It weighs 45 tons, which is considerably in excess of the Allied tanks. The armament comprises one 47-mm. (1.85 in.) cannon for direct fire ahead and six machine guns mounted in pairs on each side and astern. The crew consists of one officer and 18 men, who pack the interior; in fact, when the tank is in motion over rough terrain the men manage to stand up by means of straps, which seem quite to home for the New Yorker used to traveling in the subway during the rush hour! There are also folding seats. But as a whole the German tank is a poor piece of engineering; and its record on the battlefield does not contradict that statement.

The larger tanks first employed by the British made a speed of somewhere between three and five miles an hour. The diamond-like shape of the caterpillar belts permits these monsters to climb in and out of shell holes and to negotiate the most wretched terrain. Mud has little terror for the tanks because of the large bearing surface afforded by the belt in contact with the ground.

The Allies must have found their large tanks unsuited to the conditions of warfare, for they set to work on smaller, two-man models which made their appearance the earlier part of this year. The British small tank, known as the "whippet," came into action during the first German offensive of the year. It follows the lines of a conventional flat car provided with a low caterpillar belt and mounting a turret that houses the crew and the machine guns. It makes a speed in excess of twelve miles an hour, and has no difficulty in keeping up with fleeing Huns. The French tank followed soon after, proving to be a smaller edition of the already familiar square-box model. But the "baby" tank, like the British "whippet," is fast and readily maneuvered. There is still another French tank,

Anticipating the warfare of tanks the Germans soon developed ways and means of dealing with these moving forts. In the front line trenches they installed their so-called anti-tank guns wherever the ground out front was favorable for tank manoeuvres. It appears that they employed discarded artillery for their anti-tank defences; cannon which were worn out through constant firing and which were therefore no longer accurate for long distance work, but were still available for firing point blank at advancing tanks. So the Germans must have cleaned their military household, and the collection of ordnance odds and ends was dispatched to the front.

That helped some. Numbers of Allied tanks were put out of action in various attacks. And with typical Teuton self-pride they did not fail to announce the fact to the world. Forthwith the Germans placed the tank in the same category as the extinct dodo.

Then came General Byng's surprise attack in front of Cambrai. Heretofore tanks had been employed to accompany infantry waves during an assault, helping them to get across bad ground and to attack machine gun posts and centres of resistance. The usual artillery bombardment of several days or even weeks had always been employed until that time on the Western front since the advent of trench warfare.

But General Byng dispensed with artillery preparation. His preparations and concentrations were carried out with the greatest secrecy. On a front of over twenty-five miles he sent his fleets of tanks into battle, followed by dashing British infantry. The tanks went through the stout German belts of barbed wire and the infantry followed. Caught completely by surprise, the German troops were simply rushed off their feet before they could get their anti-tank guns into action and call for the support of their artillery in the rear.

Cambrai Gave Tank Its Reputation

That battle established the reputation of the tank. It also showed how artillery preparation could be dispensed with, and a real surprise effected by tank fleets. The lesson did not go unheeded.

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"The cavalry and tanks are far in advance of the infantry," said the official report. Here is a tank with the cavalry showing in the background.

(British Official Photo)

probably the so-called "mosquito," details of which are not available as yet.

How Tanks Worked In Last Offensives

When the Germans, on July 15 last, launched their ambitious offensive between Château Thierry and the Argonne foothills they had every hope and expectation of splitting up the French army, seizing Rheims, Chalons and Epervan and rolling on toward Paris with a Teuton peace as a reward. But they did not figure on the growing strength of the American army in France; nor did they know what was going on in the forest to their right.

Several days before the Germans opened up their so-called "peace storm" the French, anticipating the move, prepared a counter offensive under the natural camouflage of the forest of Villers-Cotteret. It is said that numerous tanks were brought up during a thunderstorm, so that the Germans failed to hear the clanking belts of the chugging monsters. The French tank crews had already had ample experience in co-operating with infantry during the numerous local attacks of the French during the past month, which were largely of the nature of dress rehearsals, so to speak, and a system of liaison had been perfected precluding the erstwhile blunder of letting the infantry get ahead of the tanks, or the tanks ahead of the infantry. For the success of a tank attack depends absolutely on the operation of tanks and infantry as a unit.

The story of the Marne counter offensive is old now. Suffice it to say that General Mangin, without the usual artillery preparation, was able to send his troops and tanks against the German flank behind a thundering rolling barrage. The Germans were taken by surprise, and before they recovered it was too late. As a result they had to retire to the Vesle, with heavy sacrifices in prisoners and booty.

Right on the heels of the Marne disaster has come the present offensive of the British and French, with some American aid, in front of Amiens and astride the Somme. Again the tank has been employed in large numbers to take the place of the preliminary artillery bombardment. Behind fleets of tanks the British have gone into battle, taking the Germans by surprise.

Marne and Somme Are Tank Victories

Both the Marne and Somme offensives, with their results in the form of 70,000 prisoners, 1,200 guns and 10,000 machine guns, have been tank victories. It is safe to say that they could not have been won without tanks, for the Germans would then not have been caught off their guard.

The new tank tactics are interesting from many angles. First of all, the tanks take the place of the usual artillery preparation intended to clear the way through the barbed wire entanglements and to account for the enemy machine gun nests while the attack is under way. The enemy front line is rushed before many of the tanks can be hit by anti-tank cannon or other artillery. Then, as the infantry continues to advance the tanks, particularly the larger "male" model equipped with cannon, act as mobile artillery and solve that great problem of supporting advancing lines with guns. Von Hutier, the German general who devised the method of attack which enabled the Huns to overrun great areas of Allied territory during this year's drives, makes use of special highly-mobile trench mortars, or "minenwerfer," for supporting his ad-

## America Hides Her Gigantic Plans for New Steel Cavalry To Be Ready for Big Offensive

vancing infantry. But even the layman can at once appreciate how much more efficient is the tank with its added possibilities of attacking enemy German gunners, no matter where they may be, while immune against machine gun and rifle fire.

Lighter Tanks, The New Cavalry

The lighter tanks with their great speed can be used as special cavalry. Retreating Germans can be chased, caught up with, machine gunned and crushed, and thrown into complete confusion. The "whippets" and the "babies" and the "mosquitoes" can worm their way far into enemy territory, when the German line is once breached, and interfere with transports and retreating troops in ways too numerous to describe. They can accompany cavalry just as they do infantry, taking care of troublesome machine guns whenever the regular cavalry is held up.

So all in all the tank has great possibilities in the battles to come. Certain it is that the Germans, who have never failed to capitalize those methods used against them, are going to develop tank fleets of their own. But they are so far behind the Allies in numbers and experience that they will have a hard time catching up. In fact, aside from their "panzerkraftwagen" being poorly designed, their main difficulty appears to be the lack of good material for crews.

And allowing that the Germans develop good tanks, in sufficient numbers and manned by skilled crews—and that is admitting something that does not seem humanly possible at this late stage of the game—they will have to face the Allied tanks in battle and the Allied anti-tank defences. Already our allies and ourselves have perfected mines for dealing with tanks; we have mines that can be placed in the probable path of a tank and that explode as the tank passes, raising the huge steel hulk a few feet in the air and letting it fall with a crash, or turning it on its side.

The most important anti-tank defence, however, is the 37-mm. (1½ in.) cannon originally introduced by the French for destroying machine gun nests. This little piece is a counterpart of the famous French 75-mm. or three-inch field gun, although it is not mounted on wheels, being intended for the use of skirmishers and therefore setting close to the ground on its tripod support. Its diminutive shell of the armor-piercing, high explosive variety can be depended upon to penetrate any tank the Germans may employ, causing death and destruction within. Because of its portability and small size it can be brought into the front line trenches, or even out in the open, with the same facility as the ordinary machine gun. And with a trained crew of four men, two acting as observers and two manning the gun, it can fire twenty-five aimed shots a minute, any one of which can inflict serious damage on a Hun tank long before it gets within dangerous range.

Both the British and the Americans have adopted the 37-mm. cannon, which has come to be known as the "tank wrecker" although originally intended for service against machine guns.

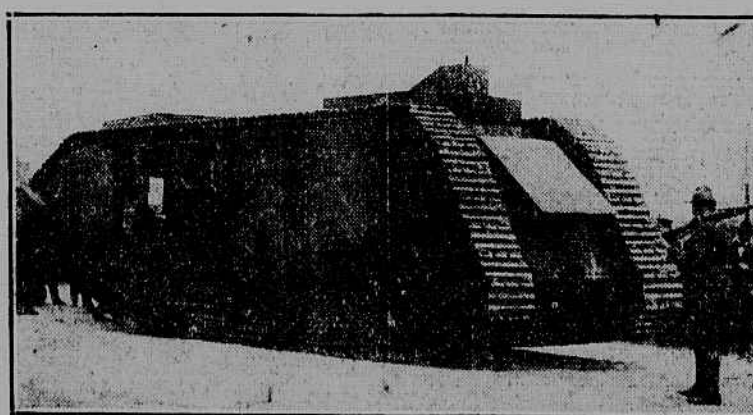
America Making Great Fleet of Tanks

General Pershing is a great believer in tanks. Undoubtedly he has asked the authorities in this country for tanks of all kinds and in large numbers. And our vast industrial facilities should permit us to turn out vast tank fleets with the same efficiency as other materials of war, thus making up for such wastage as improved German counter measures may bring about.

Little has been made public concerning our tanks now in process of construction. It is understood that we are making small tanks suitable for our quantity production methods. We are also making large tanks; in fact, as an example of our large tanks the authorities permit the publication of a photograph of a huge, forty-ton tank built by a concern near Boston, which was steam driven. The efficiency of steam over oil power plants is too well known to require explanation, and the large American tank so equipped is bound to prove a great surprise on the battlefield.

In the meantime, the tank is a weapon of surprise. The less the enemy hears about our tank plans, the better our chances of a decisive success when our "Treat 'Em Rough" crews pilot their land ships on the way to Berlin.

## THE BIGGEST AMERICAN TANK



The only American tank of which pictures are permitted. A 45-ton steam driven monster.

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